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RECENT LITERATURE.

MIVART'S THE CAT.¹—The principle underlying the method of modern scientific, particularly biological study, is to examine one animal thoroughly, in order to lay the foundation for further advanced and more comparative studies. So we have books devoted wholly to the anatomy of a few common animals, typical forms, as the frog, the butterfly, or as in the present work, the cat. The tendency is thus to extreme analytical and special views, and such books should be of course used with the understanding that the student will never make a broad, philosophical naturalist unless his studies be made comparative. But it is better to thoroughly know all that can be learned from one kind of cat, than to have a superficial knowledge of cats in general, or mammals at large. Cats are very unequally distributed, and there is always a superfluity of material in our cities, so that the incipient medical student need not lack for material for dissection preliminary to his laboratory practice on the human cadaver. For this class of students this book is all important, while it is also designed for use in colleges and higher schools, or those beginning the study of zoölogy, as an introduction to the study of vertebrate animals.

After describing clearly and simply, with the aid of abundant and most excellent wood engravings, the skeleton, muscles, organs of alimentation, circulation, respiration and secretion, of reproduction, the nervous system, with the physiology of these organs in sufficient detail, a full and adequate account is given of the cat's development.

This important subject appears to be well treated, and is, in part, the result of the author's own observations, a number of the diagrams and illustrations having been prepared for this work.

These chapters occupy about two-thirds of the book, and are succeeded by chapters on the psychology of the cat, and on the different kinds of cats; while the work closes with essays on the cat's place in nature, the cat's "hexicology," or its relations to the world about it and to fossil cats, and finally, Professor Mivart gives us his opinions as to the pedigree and origin of the cat.

In his discussion of the nature of the cat's mind, the young student will be liable to be unduly biassed by Mr. Mivart's dog-

¹ *The Cat*. An introduction to the study of backboned Animals, especially Mammals. By ST. GEORGE MIVART, Ph.D., F.R.S. With 200 Illustrations. New York, Charles Scribner's Sons, 1881. 8vo. p. 557. \$3.50.

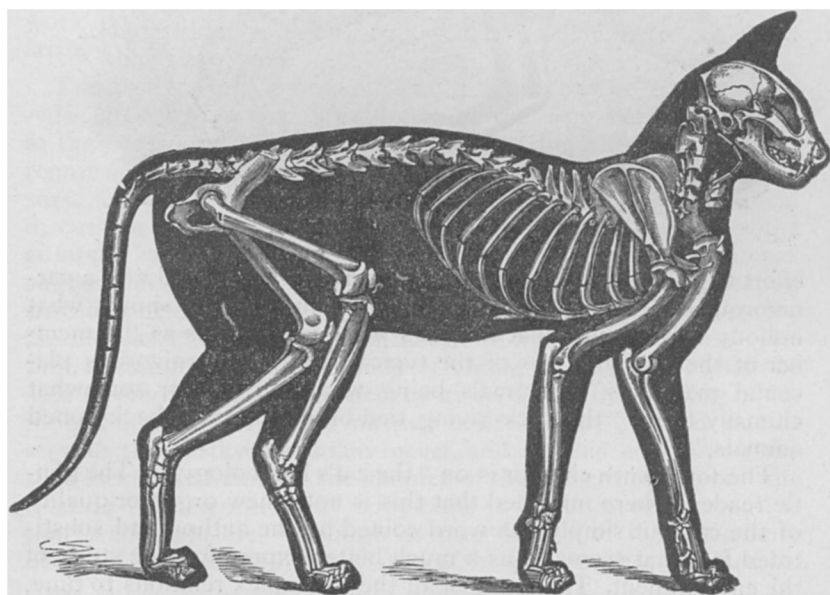
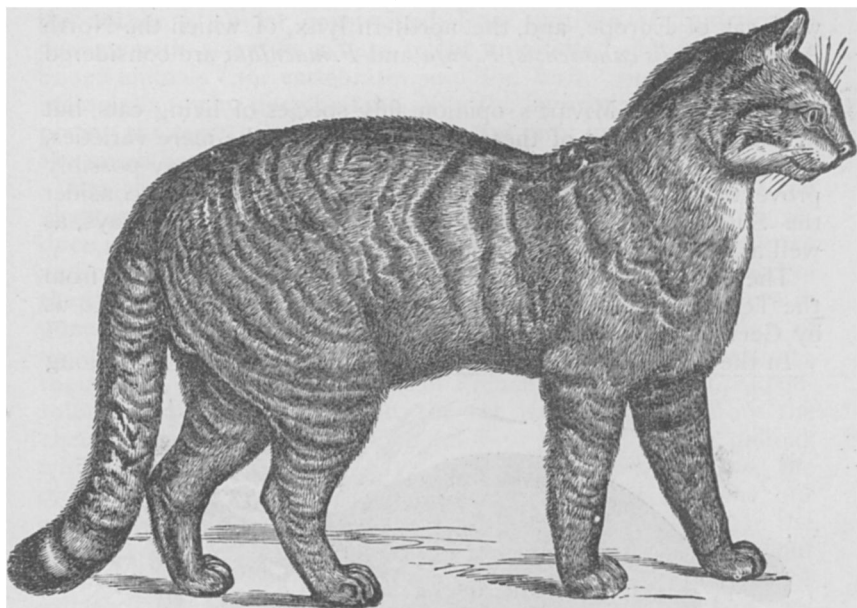
matic method of teaching a subject which needs great candor and liberality of thought, as there is a great difference of opinion among naturalists concerning the subject of animal psychology, and the student should, at the outset, know that the entire subject is unsettled, and that there are two predominant schools of thought. If he knows this, and that the matter may eventually be somewhat understood by future work, he will, perhaps, be led to make for himself new discoveries and observations on the habits and mental traits of animals, and gain clearer views of the entire field of comparative psychology. To make the *ex cathedra* statement that instinct is a "special faculty," or "a power of blindly performing appropriate complex acts, by seemingly voluntary actions in response to felt stimuli," and then in footnotes to attack what he deems the "very singular views" of Mr. Herbert Spencer and Mr. Lewes, as if they were alone in attempting to reason out the probable origin of instinctive acts; this, we contend, savors of dogmatism and oneness, and it seems to us that in an educational book of this sort both the old and the new views should be given to the student, who is supposed to have arrived at years of discretion, and to be able, in a degree, to judge for himself between conflicting theories.

Mr. Mivart also insists, as if it were a matter of course, that an animal "is really the theatre of some unifying power which synthesizes its varied activities, dominates its forces, and is a *principle of individuation*. There would seem to be here present, a vital force or principle which has no organ except that of the entire body within which it resides," etc. Now considering that a large number of biologists do not adhere to the old notion of a "vital force," we think the author should have stated both views fairly, giving in his adherence to whichever he may prefer. With the remaining portions of this chapter we agree, and the discussion concerning the nature of the cat's mind is a clear and interesting one.

Our domestic cat is probably a descendant of the old domestic cat of Egypt, which is mentioned in inscriptions as early as 1684 B.C., and was certainly domesticated in Egypt 1300 years before Christ. From Egypt the cat must have been introduced into Greece, while a fresco painting of a domestic cat was found on the wall of a Pompeiian house; although the late Professor Rolleston has suggested that the domestic cat of the Greeks was the white-breasted marten. The domestic cat is probably the descendant of the Egyptian cat (*Felis maniculata*), a native of Northern Africa.

It is a pity that among the excellent drawings of different species of cats given us in this book, a good representation of the Egyptian cat should not appear.

In this chapter the different kinds of cats are described, and many of them illustrated in an excellent way, among them the



FIGS. 1, 2.—External form of Wild Cat and figure of the Skeleton, showing the relations of the latter to the external form.

wild cat of Europe, and the northern lynx, of which the North American *Felis canadensis*, *F. rufa* and *F. maculata* are considered as varieties.

There are, in Mivart's opinion, fifty species of living cats, but he thinks that some of these may turn out to be mere varieties, and some forms regarded in this book as varieties, may possibly prove to be really distinct species, especially when we consider the South American spotted cats, the ocelots and margays, as well as the smaller cats of China and neighboring regions.

The fossil species are then considered, especially those from the Tertiaries of France and North America, made known to us by Gervais, Filhol, Cope and Leidy.

In the discussion on the cat's place in nature, after a too long

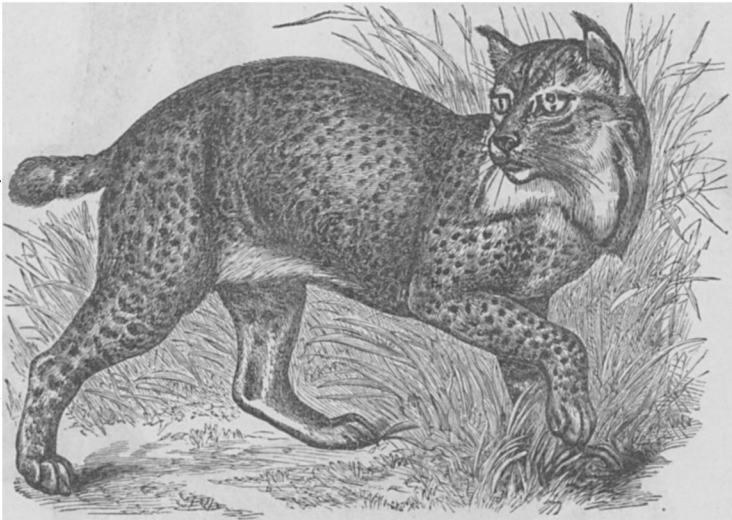


FIG. 3.—The Northern Lynx, var. *Felis maculata*.

effort to show that the cat is not a plant, but an animal and a carnivorous one, the author reasons by exclusion, and shows, what nobody will dispute, that the cat's place in nature is as "a member of the typical genus of the typical family of carnivorous placental mammals," mammals being what our author somewhat clumsily terms "the suck-giving, tied-brained class of back-boned animals."

The fourteenth chapter is on "the cat's hexicology." The gentle reader is here informed that this is not a new organ or quality of the cat, but simply is a word coined by the author and substituted for what seems to us a much better expression, the study of the environment. The study of all the "complex relations to time, space, physical forces, other organisms, and to surrounding conditions generally, constitute the science of *hexicology*." But if

the author is so far constrained, from motives of prudence in dealing with scientific names to the uninitiated as to use "back-boned animals" for vertebrates, and the term "suck-giving" for mammalian, why does he take away the layman's breath by proposing the term *hexicology*, when we are only just getting used to the much better term environment?

But notwithstanding the formidable name at the head of the chapter, the essay itself is quite interesting, and serves to introduce us to the more valuable and interesting one on the pedigree and origin of the cat. In this essay all that has been learned of the cat's structure and development, and of cats and carnivora in general, is brought to bear upon the question of the origin of the species, and family, and order. In answer to these questions, the author, adopting the results of French and American palæontologists, states his belief that the cat has originated from the cheetah, and the Felidæ in general from some Viverrine animal, while the carnivora may have descended from *Arctocyon*, the oldest Tertiary mammal, and contrary to the views of some, our author derives the carnivora from the insectivora, rather than the marsupials. As to the method of evolution, Mivart stands out from most other English evolutionists as a believer in sudden or saltatory evolution as well as slow, gradual development of species, his views in a general way agreeing with those of several American writers on this subject. This last chapter is certainly an able and interesting discussion, and the entire volume is the work of an expert comparative anatomist, and of a strong, able, facile writer.

THOMAS' FIFTH REPORT ON THE INJURIOUS INSECTS OF ILLINOIS.¹—In its typographical appearance, as well as general usefulness to the farmer or gardener, and interest to the entomologist, this report appears to us to be somewhat in advance of its predecessors. The longest article is on the army worm, and is a critical discussion of known facts regarding its natural history, some points of which still remain to be cleared up. Professor Thomas suggests as the result of his meteorological studies in connection with this insect and the chinch bug, that two favorable seasons are necessary to develop these insects in injurious numbers. The time is coming when by a study of climatic changes, we shall be able to predict, with some degree of certainty, the coming of injurious insects. This has already been in part worked out as regards the Rocky Mountain locust, and in this connection the suggestions and facts in the chapter of the present report on "the relation of meteorological conditions to insect development" is timely and valuable. Enough is now known of the periodicity in life of the more injurious insects to indicate that the Hessian

¹ *Tenth Report of the State Entomologist on the Noxious and Beneficial Insects of the State of Illinois*. Fifth Annual Report by CYRUS THOMAS, Ph.D., State Entomologist. Springfield, 1881. 8vo, pp. 244.